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Code division in optical memory devices based on photon echo

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Abstract

The theory of multi-channel optical memory based on photon echo is developed. It is shown that under long-lived photon echo regime the writing and reading of information with code division is possible using phase modulation of reference and reading pulses. A simple method for construction of a system of noise-like signals, which is based on the segmentation of Frank sequence is proposed. It is shown that in comparison to the system of random biphase signals this system leads to the efficient decreasing of mutual influence of channels and increasing of random/noise ratio under reading of information.

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Keywords

Code division, Frank sequence, Multi-channel optical memory, Photon echo